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**Аида Аршабекқызы Бейсенбаева педагогика
ғылымдарының докторы, профессор**

80 жаста



Бейсенбаева Аида Аршабекқызы –«қазақтың қаны бір, жаны бір қолбасшысы – мұғалім» осы маржандай тізілген шағын сөз ұстаз еңбегінің болашаққа деген шынайы махаббатын, адал азаматтық ниетін білдіретіндігі сөзсіз. Ұстаз ұғымын осылайша түсініп, еңбек еткен, жан-жүрегімен сезіне білген педагог-ғалым, педагогика ғылымдарының докторы, профессор.

Аида Аршабекқызы – өз өмір жолымен үлгі-өнеге болатын ұлағатты ұстаз. Ол Абай атындағы ҚазПИ-ның орыс тілі және әдебиет пәнінің оқытушысы мамандығын 1964 жылы тәмамдап, еңбек жолын қазақ ауыл мектебінде орыс тілі және әдебиеті пәнінен мұғалім болудан бастаған. Жас маман ауыл балаларымен жұмыс істей жүріп, мұғалім мамандығының қыр сырынан үлкен тәжірибе жинайды. Оның ғылыми жолы 1966 жылы Абай атындағы ҚазПИ-ның педагогика кафедрасының аспиранты, 1970 жылы педагогика кафедрасында аға оқытушысы, 1971 жылы педагогика

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NEUROPSYCHOLOGY OF BILINGUALISM AND LANGUAGE ACQUISITION

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Annotation. The article gives the description of multilingualism in the neuropsychological aspect and an idea about the basic human parameters for bilingualism, about what determines the actual ability to master several languages and use them in communication simultaneously or sequentially. Based on the neuropsychological characteristics of bilingualism and educational bilingualism, it is possible to describe the variability of the psychological types of bilinguals and determine the influence of various social factors on the characteristics of language acquisition and speech behavior.

Keywords: neuropsychology, bilingualism, multilingualism, neuroplasticity, first language, second language

Аңдатпа. Мақалада көптілділіктің нейрпсихологиялық аспектісіндегі сипаттамасы беріліп, екі тілді меңгеру қабілеті мен қарым-қатынас барысында екі тілдің қатар немесе кезекпен қолданылуын сипаттайтын қостілділіктің нақты тұлғалық параметрлері туралы айтылады. Мақалада аталған қостілділік пен білім беру билингвизмінің нейрпсихологиялық сипаттамаларына негізделе отырып, билингвтердің психологиялық типтерінің өзгергіштігін сипаттауға және тілді меңгеру мен сөйлеу әдебінің ерекшеліктеріне әртүрлі әлеуметтік факторлардың әсерін анықтауға болады.

Түйін сөздер: нейрпсихология, билингвизм, көптілділік, нейроикемділік, бірінші тіл, екінші тіл

Аннотация. В статье дано описание многоязычия в нейропсихологическом аспекте и представление об основных человеческих параметрах двуязычия, о том, что определяет реальную способность владеть несколькими языками и использовать их в общении одновременно или последовательно. На основании приведенных нейропсихологических характеристик двуязычия и образовательного двуязычия можно описать изменчивость психологических типов билингвов и определить влияние различных социальных факторов на характеристики овладения языком и речевого поведения.

Ключевые слова: нейропсихология, билингвизм, многоязычие, нейропластичность, первый язык, второй язык

Introduction. Neuropsychology of bilingualism has become one of the most discussed topics in cognitive science in recent decades. The reason for this is both the wide spread of multilingualism and the accumulated empirical material on the representation of languages in the minds of bilingual people. The mass nature of bilingualism, the routine of the simultaneous use of several languages in communication makes it possible to study this kind of communication in various communicative spheres and social strata. In addition to the social variability of bilingualism, the linguistic variability itself also fell into the focus of attention of researchers. The development of neuropsychological methods for examining speech behavior and the availability of instrumental methods for fixing brain activity in solving problems of language choice and message planning by bilinguals made it possible to identify previously unknown brain mechanisms that ensure the speech activity of a person speaking several languages. The importance of the neuropsychological characteristics of bilingualism is determined by the fact that neuropsychological mechanisms represent the basis, material substrate, multilingual speech activity - the basis that everyone needs and every representative of humanity has. All social factors are layered on this substrate, determine the variability of development and manifestation of common neurophysiological and neuropsychological mechanisms.

Methods. During the study, methods of mass collection, sorting, comparison of materials were used to collect and analyze the experiments. It is vivid that the results obtained by analyzing the performed experiments have a high degree of accuracy. Indeed, depending on the results of specific tasks the researcher can accurately study the approach to solving many open questions in the field of neurolinguistics and neuropsychology of bilingualism.

Research results. Mass bilingualism is caused by global changes in the world economy and the transformation of the socio-demographic situation in developed countries. Mass migration from the Third World to North American countries and Europe, the emergence of transnational corporations with branches in all parts of the world, the development of telecommunications contributed to the spread of not only natural, but also artificial bilingualism (educational multilingualism). The possibility of self-realization outside the home country, the availability of movement and employment in different regions of the planet create motivation to purposefully study foreign languages. The very teaching of languages and mastery of languages is usually interpreted as cross-cultural and global communication, as the development of a new cultural tradition and new patterns of behavior. New trends in the examination of the existence and functioning of languages in the global world presuppose a departure from such an unambiguous interpretation; a more differentiated approach to multilingualism is presented in the publication [Кирилина, Гриценко, Лалетина 2012].

Turning to the practice of using languages in the context of globalization makes it possible to note that often it is not so much about mastering different languages as about the fragmentary use of a limited set of clichés in standard communication situations: bilinguals distribute known languages by communication spheres in accordance with the language situation in the country of residence. Depending on the communicative role of language in society a certain language attitude is developed [Appel, Muysken 2006: 32].

It is essential to recall that when studying linguistic contacts, the national language is not considered as something homogeneous. In a multilingual society, at least four language variants

are distinguished: a standard variety of language A, a non-standard variety of language A (which arose under the influence of language B), a standard variety of language B, and a non-standard variety of language B (which arose under the influence of language A) [Appel, Muysken 2006: 32]. Moreover, the standard varieties of contacting languages, in turn, are also not homogeneous, since styles and idioms caused by the difference in the spheres of functioning can be preserved in the two languages. Accordingly, bilingualism does not always imply full mastery of two (or more) languages, since not all monolinguals are fluent in their native language in all its diversity [Протасова 1998; Овчинникова 2010].

In the conditions of linguistic contact, both interacting languages change. Such changes are important for natural bilingualism. A natural bilingual learns the language directly in communication, and, as a rule, in a relaxed dialogue and polylogue. Coverage of all variants of L2 in casual communication is impossible by definition, since in this communicative sphere, the codified literary version of the language is usually not used. In this case, they master the “language of the street” just that idiom that is primarily exposed to the influence of languages in contact [Овчинникова 2010].

Multidimensional studies of the modern multilingual and multicultural community reveal various socio-cultural consequences of globalization and the resulting changes in the functioning of national languages (see review: [Кирилина, Гриценко, Лалетина 2012]). One of the consequences of globalization is the variety of types of bilingualism and the spread of polylinguism with English as L2 and Ln. Because of this, bilingualism with contacting English is better studied than any other.

Thus, bilingualism is a mass phenomenon characteristic of modern society. In the context of globalization, the connection between bilingualism and biculturalism is not so obvious, since the probable use of different languages in different fields of activity does not imply the development of culture and cross-cultural communication in the full sense of the word. One way or another, bilingualism is in demand and socially attractive; proficiency in English allows you to plan life scenarios with more choice. Accordingly, the ability to master languages, as well as the ability to simultaneously use several languages to solve the current problem, often play a significant role in social adaptation in a multilingual and multicultural community.

Linguistic abilities and their neuropsychological support

In order to successfully master a language in natural conditions, certain abilities are required. Note that the very term linguistic (linguistic) abilities is conditional. In this case, we do not mean the actual ability to master any of the national languages in ontogenesis, but a predisposition to language acquisition. Sensitivity to languages does not exist separately, in isolation from other abilities [Холодная 1997]. Rumyantseva defines linguistic ability “as a mental and psychophysiological function of a person, inherent biologically and genetically, but formed and developed socially on the basis of the anatomophysiological and neurophysiological organization of a person; a function that enables the human psyche to reflect and generalize external linguistic material, translating it into special internal codes in the form of unconscious and conscious rules of the language” [Румянцева 2004: 170]. The key in this definition, in our opinion, is the recognition of the combination of the biological and the social; this combination provides an opportunity to generalize and “translate” the result of processing the input into a set of rules both with the participation of consciousness and unconsciously.

Abilities for languages are mental and psychophysiological functions formed in the course of evolution due to the need for social interaction and the importance of socialization for the individual. The psychological characteristics of a person, his readiness to realize and develop this mental and psychophysiological function are of great importance for the development of linguistic talent; the decisive quality for the manifestation of a talent for languages is extraversion as an attitude towards communication [Байэп 2007]. It is more difficult for an introvert to master a language, since an introverted attitude does not contribute to quick adaptation in society, active interaction with others. Meanwhile, introverts have another advantage that allows them to compensate for the duration of socialization, namely, developed

reflection, which implies the use of a different language acquisition strategy: cognitive instead of communicative [Кабардов 1989]. For receptivity to languages, such mental functions as memory and attention are essential. The key role is attributed to verbal memory (the ability to memorize what was heard and to process the flow of speech signals), the volume of random access memory (the ability to operate simultaneously with a large number of units) and imitation abilities.

It is important to note the main components of linguistic abilities necessary for mastering a foreign language in the context of purposeful learning, then they are considered [Carroll 1993]:

- phonetic coding ability. The ability to encode incoming sound signals for storage in long-term memory allows a person to save the perceived sequences of sounds associated with a certain content plan and reproduce them as needed;

- grammatical sensitivity, which is associated not so much with the acquisition of grammar directly as with the ability to recognize dependencies between words in a sentence, thereby determining the syntactic functions of linguistic units [Robinson 2001:324]. The basis of grammatical sensitivity is the analytical ability to distinguish segments in a speech stream and establish their variability both in comparison with stored standards and in terms of their location in the speech signal chain;

- the skill of rote learning ability, which is necessary when associating the plane of expression with the plane of the content of a linguistic sign, which are arbitrarily linked. Mechanical memorization provides vocabulary replenishment;

- inductive language learning ability, in demand for systematizing empirical material, recognizing patterns of relationships and deriving more general rules relevant to linguistic material.

Discussion. As it is written, the allocated abilities are associated both with long-term memory and with the processing of current information, that is, with operative and short-term memory. According to R. Schmidt, the most significant contribution to mastering L2 under the conditions of purposeful learning is made by a conscious linguistic approach to the material and developed voluntary selective attention [Schmidt 2001]. Linguistic abilities are provided by the activity of both the right and left hemispheres of the brain. For grammatical receptivity, inductive processing of incoming linguistic signals, it is necessary to analyze and systematize incoming signals, provided by the work of the left hemisphere, while mechanical memorization of speech segments and the association of sound with denotation are provided by the work of the right hemisphere of the brain.

Motivation is of paramount importance in the context of educational bilingualism. The limbic system of the brain is involved in the formation and maintenance of motivation. In some works of neurophysiologists, one can come across the assumption that a violation of the connection between the limbic system and the rest of the brain, which occurs in a situation of stress and strong emotional arousal, leads to a decrease in the activity of mirror neurons (see review: [Черниговская 2006]). Emotional involvement, positive emotions, and empathy, which do not cause deformation of the emotional landscape, do not disrupt the communication of the limbic system with the rest of the brain and preserve the activity of the limbic system's mirror neurons.

In the neuropsychological aspect, language acquisition in the context of educational bilingualism is similar to language acquisition in natural communication by middle-aged people. The susceptibility to statistical learning decreases with age, which complicates the unconscious processing of the incoming linguistic material. With a decrease in susceptibility to statistical learning, it takes more time and more intensive participation in natural communication on L2 for involuntary memorization and unconscious processing of information. A prerequisite is the conscious control over speech activity and the formulation of rules. The formed brain provides the same resources: with late and artificial bilingualism, language competence in L2 is provided to a greater extent by the left hemisphere [Котик 1988].

Thanks to the plasticity of the brain, new neural ensembles that involve not only specialized parts of the brain, but also deep structures in solving current problems, bilinguals

acquire advantages in cognitive activity when processing non-verbal material. Early bilingualism protects the brain from rapid aging. In early bilingualism, there is a greater amount of gray matter in the inferior parietal cortex, which serves as a kind of cognitive reserve for the aging brain [Mechelli et al. 2004]. Elderly bilinguals are superior to their peers in the stability of attention during switching activities and the level of cognitive control.

According to E. Bialystok, the irony of changes in brain activity in bilinguals is that linguistic experience provides an advantage in processing non-verbal information and solving non-verbal tasks by reducing the amount of knowledge of each of the known and regularly used languages [Bialystok 2009: 8].

Conclusion. In today's globalized world, multilingualism is the norm. Language proficiency ranges from the use of clichés in standard communication situations to literary creation in L2. Linguistic contacts lead to a change in the contacting languages, to the emergence of a new version of the national language, reflecting the interference with other languages.

Mastering a second language and using two or more languages in communication leads to changes in the functioning of the brain in the process of speech activity. The simultaneous use of several languages requires the rapid performance of such cognitive operations as speech signal recognition, identification of a code (language) and its activation in conditions of competition between codes; selection of an element from several competing codes (languages); switching from one code to another without mixing them; control over the implementation of the semantic program in the selected language. Accordingly, bilingual communication requires specific neural ensembles that unite different parts of the brain that are not characteristic of monolingual communication.

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